

**WE CLAIM:**

1. Apparatus for processing data, said apparatus comprising:

processing logic operable to perform processing operations under control of  
5 program instructions and subject to interruption by a plurality of interrupt handling  
programs; and

a nested interrupt controller operable to control execution of said plurality of  
interrupt handling programs in response to priority level values associated with  
respective ones of said plurality of interrupt handling programs, each priority level  
10 value being divided into a first portion and a second portion; wherein

said nested interrupt controller is operative to compare a first portion of a  
priority level value associated with a pending interrupt handling program with a  
corresponding first portion of a priority level associated with an active interrupt  
handling program to determine whether said pending interrupt handling program  
15 should pre-empt said active interrupt handling program or wait to be activated; and

said nested interrupt controller is operative to order for activation a plurality of  
pending interrupt handling programs based upon a comparison of respective first  
portions of priority level values associated with said plurality of pending interrupt  
handling programs and then for any pending interrupt handling programs having equal  
20 respective first portions upon a comparison of respective second portions of said  
priority level values.

2. Apparatus as claimed in claim 1, wherein said first portions and said second  
portions are contiguous portions of said priority level values.

3. Apparatus as claimed in claim 1, wherein a boundary position between said  
first portions and said second portions within said priority level values is  
programmable such that differing proportions of said priority level values may be  
allocated to said first portions and to said second portions.

4. Apparatus as claimed in claim 1, wherein said first portions define a single  
group of interrupt handling programs and said second portions define relative ordering  
within said single group.

5. A method of processing data, said method comprising the steps of:  
performing processing operations under control of program instructions, said processing being subject to interruption by a plurality of interrupt handling programs;  
and  
5 controlling nested interrupt execution of said plurality of interrupt handling programs in response to priority level values associated with respective ones of said plurality of interrupt handling programs, each priority level value being divided into a first portion and a second portion; wherein  
said step of controlling compares a first portion of a priority level value  
10 associated with a pending interrupt handling program with a corresponding first portion of a priority level associated with an active interrupt handling program to determine whether said pending interrupt handling program should pre-empt said active interrupt handling program or wait to be activated; and  
said step of controlling orders for activation a plurality of pending interrupt  
15 handling programs based upon a comparison of respective first portions of priority level values associated with said plurality of pending interrupt handling programs and then for any pending interrupt handling programs having equal respective first portions upon a comparison of respective second portions of said priority level values.
- 20 6. A method as claimed in claim 5, wherein said first portions and said second portions are contiguous portions of said priority level values.
7. A method as claimed in claim 5, wherein a boundary position between said first portions and said second portions within said priority level values is  
25 programmable such that differing proportions of said priority level values may be allocated to said first portions and to said second portions.
8. A method as claimed in claim 5, wherein said first portions define a single group of interrupt handling programs and said second portions define relative ordering  
30 within said single group.